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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/884,000	06/19/2001	Daniel Davidson MacFarlane Shearer III	2277-020	2404

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EXAMINER

AGDEPPA, HECTOR A

ART UNIT PAPER NUMBER

2642

DATE MAILED: 07/27/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/884,000

Applicant(s)

MACFARLANE SHEARER ET AL.

Examiner

Hector A. Agdeppa

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 21 March 2005.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-26 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-26 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

1. This action is in response to applicant's amendment filed on 3/21/05. Claims 1 - 26 are now pending in the present application. **This action is made final.**

Claim Rejections - 35 USC § 103

The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

2. Claims 1 – 5, 7 – 12, 14 – 20, and 22 – 24 are rejected under 35 U.S.C. 103(a) as being unpatentable over applicant's admitted prior art in view of US 6,397,070 (Black).

As to claims 1, 7, 12, 14, 15, and 22, applicant teaches that it is old and well known in the art to have a user radio having a power amplifier linearizer that applies a

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transfer function to a modulated data stream, wherein the power amplifier linearizer is coupled to a power amplifier and is configured to transmit a communication signal generated by the power amplifier. (P. 1, line 9 – P. 2, line 19 of the specification for the present invention)

Applicant also teaches that it is old and well known in the art to use various transfer functions applied in said power amplifier linearizer, wherein the communication signal is locally received, monitored, and analyzed and then used to select one of the various transfer functions to use. (P. 2, line 20 – P. 3, line 2 of the specification for the present invention)

What is not taught by applicant's admitted prior art is a hub radio that receives the communication signal from the user radio and generates a signal quality measurement for said communication signal and a command for adjusting the transfer function at the user radio.

However, Black teaches a method and apparatus for estimating reverse link loading in a wireless communication system wherein a remote station 12, read as the claimed user radio, may transmit reverse link signals 16 to base station 10, read as the claimed hub radio. (Col. 5, lines 8 – 15 of Black) Based on the reverse link signals, base station 10 will perform conversions, amplification, filtering, etc. and generate a control command which decreases the transmission power of forward link signals 14 (sent to remote station 12). As a result, remote station 12 “adjusts” its perceived performance and hands off to another cell thinking that the base station 10 is further than it actually is. (Col. 9, lines 20 – 34 of Black)

Although Black's teaching regards cell loading, the idea of using a base station or hub radio to "remotely adjust" the performance of a remote station or user radio can be applied to applicant's admitted prior art with regards to power amplification linearization. Therefore, it would have been obvious for one of ordinary skill in the art at the time the invention was made to remotely adjust the transfer function applied to the power amplification linearizer, instead of locally doing so. This is because, as taught by Black, more accuracy can be achieved by analyzing specific remote stations signals. (Col. 2, lines 62 – 65 of Black) The same motivation is taught by applicant as the reason for using remote power amplification linearization instead of local power amplification linearization, i.e. that remote adjustment is advantageous to adjustment based on merely predetermined transfer functions. (P. 4, line 31 – P. 5, line 3 of the specification for the present invention)

As to claims 2, 8, and 16, applicant's admitted prior art teaches that a communication signal may be locally monitored and analyzed in order to characterize the distortion to generate the data used to populate linearizer look-up-tables, all ultimately to ameliorate the influence of noise. (P. 2, lines 20 – P. 3, line 2 of the specification for the present invention. And as discussed above regarding claims 1, 14, and 15, it would have been obvious to do such monitoring at a base station or hub radio.

Moreover, Black teaches monitoring a parameter such as the portion of the reverse link spectrum received from remote station 12 which is used to form measurements such as energy. (Col. 5, line 30 – Col. 9, line 19 of Black) Such would

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be an analogous type of monitoring in order to remotely control the remote station 12 of Black or in the case of the present invention, remotely adjust the transfer function used in the user radio.

As to claims 3, 4, 9 – 11, and 17 - 19, the use of constellation points as claimed is old and well known as taught by applicant's admitted prior art. (P. 11, lines 9 – 31 of the specification for the present invention)

As to claim 5, see the rejection of claim 1 and note that again, such is taught to be old and well known in the art by applicant's admitted prior art. (P. 8, lines 23 – 32 of the specification for the present invention)

As to claim 20, carrier and symbol synchronization would be inherent or at the least obvious in applicant's admitted prior art and Black, inasmuch as distortion in phase rotation is extremely old and well known and one of the effects predistortion and linearization apparatuses and methods seek to eliminate.

As to claims 23 and 24, see the rejection of claim 1 and note that applicant's admitted prior art regarding predistortion techniques always use feedback loops. The feedback loop is exactly how it is determined how to predistort a signal.

As to claim 26, see the rejection of claim 1.

What the combination of applicant's admitted prior art and Black does not teach is a third site or third radio.

However, it would have been obvious for one of ordinary skill in the art at the time the invention was made to have interjected a third site or radio into the above-discussed system and method using 2 radios, i.e., a user radio and hub radio.

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Interjecting the third site or radio would merely be using another user radio in the feedback/command transmitting aspect of a two radio system and method. As discussed above, both Black and applicant's admitted prior art contemplates systems using multiple radios and the limitation claimed would merely consist of expanding the current system and method.

3. Claims 6 and 25 are rejected under 35 U.S.C. 103(a) as being unpatentable over applicant's admitted prior art in view of US 6,397,070 (Black) and further in view of US 5,867,065 (Leyendecker).

As to claims 6 and 25, applicant's admitted prior teaches that it is old and well known for a user radio to transmit system control data and payload data. (P. 11, lines 2 – 8 of the specification for the present invention.)

Even if applicant's admitted prior were interpreted as not teaching such a feature, Leyendecker teaches predistortion in a linear transmitter, i.e., applicant's admitted prior art, and specifically teaches that normal voice and data transmissions, i.e., payload data need not be interrupted to transmit special sequences. (Col. 6, lines 59 – 65 of Leyendecker)

Moreover, Black, as discussed above teaches sending control commands and signals while conversations are occurring, for example, during a handoff, i.e., while payload data is being transmitted.

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4. Claims 13 and 21 are rejected under 35 U.S.C. 103(a) as being unpatentable over applicant's admitted prior art in view of US 6,397,070 (Black) and further in view of US 5,732,333 (Cox et al.)

As to claims 13 and 21, neither applicant's admitted prior art nor Black teaches calibration.

However, Cox et al. teaches the use of a conventional calibrated diode detector 238 placed between the power amplifier and input receiver portion. (Fig. 2 and Col. 8, lines 7 – 22 of Cox et al.)

It would have been obvious for one of ordinary skill in the art at the time the invention was made to have used such a calibrator inasmuch as Cox et al. teaches a linear transmitter using predistortion, such as applicant's admitted prior art, as noted above. Therefore, calibration techniques such as that taught by Cox et al. would be applicable to applicant's prior art.

Response to Arguments

5. Applicant's arguments filed 3/21/05 have been fully considered but they are not persuasive.

As to applicant's arguments regarding Black, examiner maintains the above rejection. Applicant goes on at length about how Black does not teach transmission characteristics of a user radio and related issues. However, by this argument, applicant seems to want examiner to produce a 102 reference. Examiner however, gave a 103

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rejection. This is because applicant's admitted prior art teaches everything claimed except the remote linearization aspect of the present invention. Therefore, all the requisite user radio elements and functionality is already taught. Black was used as discussed above, because it explicitly taught a motivation for using remote adjustments in a wireless environment. Therefore the idea of remote adjustment, which in the case of the admitted prior art would involve linearization as the adjustment, was already known as being advantageous because those adjustments would be more accurate. It must be recognized that any judgment on obviousness is in a sense necessarily a reconstruction based upon hindsight reasoning. But so long as it takes into account only knowledge which was within the level of ordinary skill at the time the claimed invention was made, and does not include knowledge gleaned only from the applicant's disclosure, such a reconstruction is proper. See *In re McLaughlin*, 443 F.2d 1392, 170 USPQ 209 (CCPA 1971).

As to applicant's arguments regarding independent claims 7, 14, and 15, no hub radio or any system element in a telecommunications environment, whether wireless or wired can operate without some type of processor or controller. Furthermore, as already discussed above, it is the "idea" of Black that is being used to modify the admitted prior art and if the idea of remote adjustments were applied to the admitted prior art, a controller would have to estimate the transfer function in response to a signal quality measurement. This process as to linearization is analogous to basing on reverse link signals, performing conversions, amplifications, filtering, etc. and generating a control command as to cell loading taught by Black.

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As to applicant's arguments regarding the dependent claims, again applicant seems to attempt to refute the applicability of Black as a 102 reference, but again, examiner has used Black in a 103 rejection.

As to applicant's arguments regarding Leyendecker, Leyendecker was used only to show the transmission of payload and control data, nothing else. Moreover, Leyendecker was used as an additional source for rejection because examiner already stated that the admitted prior art could be interpreted as teaching such limitations. Applicant has not refuted this assertion at all and therefore it is assumed that this interpretation of the admitted prior art reads on the claimed invention.

Conclusion

6. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

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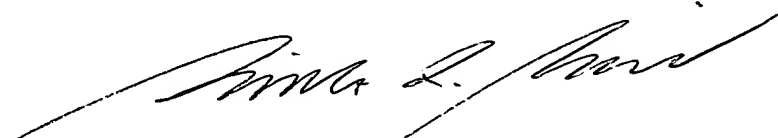
7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Hector A. Agdeppa whose telephone number is 571-272-7480. The examiner can normally be reached on Mon thru Fri 9:30am - 6:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Ahmad F. Matar can be reached on 571-272-7488. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Hector A. Agdeppa
Examiner
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H.A.A.
July 21, 2005

A handwritten signature in black ink, appearing to read "Bing Q. Bui", written in a cursive style.

BING Q. BUI
PRIMARY EXAMINER